ANTICIPATING THE EXTRAORDINARY

OFFICE OF PREPAREDNESS AND EMERGENCY RESPONSE

CRISES AND DISASTERS from influenza vaccine shortages, tsunamis, hurricanes, earthquakes and floods, to emerging threats such as avian influenza marked 2005. The year began with one of the world's worst disasters, the South Asian tsunami, that killed more than 280,000 people and left millions more without homes and basic necessities. In late August, Katrina, one of three category-five hurricanes, devastated New Orleans, killing 1,300 people and displacing millions throughout the southern states. Hurricane Rita struck within a few weeks, sending oil prices soaring, and Wilma followed in October. Soon after, a 7.6-magnitude earthquake struck in Northern Pakistan, for which the death toll passed 80,000 and more than three million were left without homes.

HURRICANE RESPONSE EFFORTS

Before Hurricane Katrina made landfall in August, the Office of Preparedness and Emergency Response (OPER) began working in the Director's Emergency Operations Center (DEOC) in anticipation of several issues that were certain to arise in the aftermath of the storm. OPER staff assisted in the initial recruitment of CDC's public health response teams, who could initially deploy during the response, and over 70 people from NIP were deployed on missions to the affected region or to lead and support teams in the DEOC. OPER staff played a key role in helping to lead the CDC-wide deployment efforts in response to Hurricanes Katrina, Rita, and Wilma. Many of the deployed staff from NIP headquarters conducted needs assessments in states affected directly or indirectly by the hurricanes. In discussions with those states, NIP staff helped to determine what the states needed to keep immunization programs going, especially in terms of their vaccine needs.

OPER coordinated the issuance of interim vaccination recommendations for emergency workers deployed to areas impacted by Hurricane Katrina as well as displaced persons from this region. The focus of the recommendations for displaced persons was two-fold: one, to ensure that children, adolescents, and adults are protected against vaccine-preventable disease in accordance with current recommendations, and two, to reduce the likelihood of outbreaks of vaccine-preventable diseases in large crowded group settings. Along with these recommendations, NIP worked with FDA to assess the supply of all vaccines recommended for workers and for those in shelters, including what the manufacturers had in stock, what was available in CDC's stockpile, and what could be identified in state inventories. Manufacturers also donated vaccines directly to states or private organizations, and NIP monitored

Vaccinating local health workers in Gulfport, Mississippi following Hurricane Katrina

the magnitude of those donations. OPER, in collaboration with NIP's Immunization Services Division, also coordinated the purchase of vaccine supplies in accordance with the interim recommendations for the states of Louisiana and Mississippi.

In addition to the doses purchased, the Texas state health department used vaccines on hand to begin vaccination of sheltered persons in Houston, Dallas, and San Antonio. When these vaccine supplies were exhausted, NIP helped to arrange for other states not impacted by the hurricane to contribute vaccine resources—more than $6 million worth—to support ongoing vaccination activities. Texas then had adequate supplies of vaccine on hand to vaccinate the remaining displaced persons.

Through the end of 2005, NIP remained in frequent contact with the state immunization programs which oversee or manage vaccination initiatives among displaced persons and emergency first responders.

IMMUNIZATION INFORMATION SYSTEMS HELP CHILDREN AVOID EXTRA IMMUNIZATIONS

In Louisiana, Mississippi, and Alabama, many people who had to evacuate because of Hurricane Katrina lost not only homes and possessions but personal records such as their children's immunization records. Existing immunization information systems made it possible for states to locate children's records to determine immunization status prior to school enrollment. In Louisiana alone, CDC estimated that as early as October 2005, more than 20,000 queries were made to the Louisiana Immunization Network for Kids Statewide (LINKS) regarding vaccination histories for children who were evacuated. LINKS remains functional because a backup system located in Baton Rouge has been operational since Katrina struck.

An Alabama Department of Public Health professional spent the day in an evacuation center. When she asked one mother with seven children whether she had any immunization records, the mother said she had nothing. Using the LINKS system, the public health professional found records on six of the seven children. The mother exclaimed, "We have proof that we are real people!"

Thousands of young evacuees throughout the United States have benefited from LINKS by gaining access to their immunization records electronically. Although special provisions were made to accept students without proof of immunization into their new schools, having an immunization record provides extra assurance that no delays will occur, and no immunizations will be repeated unnecessarily. CDC recommends that children be vaccinated again if records do not exist. CDC estimates that 75% of the immunization history queries made to LINKS have been from Texas, particularly from the Houston area.

For health professionals only, several means were made available to access immunization history data from LINKS, including using Health Level 7 (HL7) messaging or just "view only" access. HL7 enables not only access to information but also the ability to input information. For example, if a provider administers a vaccination to a child who was displaced, they may input this information into LINKS directly from their location, and the immunization record stays up-to-date. As of

early October 2005, eight states and the city of Houston had HL7 direct access to LINKS. "View-only" enables a provider to access LINKS and to view the immunization history from their location. A total of 43 states, Washington, D.C., and 10 cities have "view-only" access to LINKS.

These connections established by NIP immunization information systems enabled many immunization histories to be retrieved thereby reducing or eliminating the need for costly re-vaccination of Hurricane Katrina displaced children.

PANDEMIC INFLUENZA PREPAREDNESS

ONE OF THE MOST IMPORTANT PUBLIC HEALTH ISSUES our nation and the world faces is the threat of pandemic influenza. The ongoing outbreaks of avian influenza in birds have the potential to turn into a human influenza pandemic that could have significant global health, economic, and social consequences. To date, outbreaks of the H5N1 strain of avian influenza have been confirmed among birds in Cambodia, China, Croatia, Indonesia, Kazakhstan, Laos, Mongolia, Romania, Russia, Thailand, Turkey, and Vietnam. Japan, Malaysia, and South Korea have also experienced outbreaks in the past. More than 60 deaths out of over 120 human cases of the disease have been confirmed in Cambodia, Indonesia, Thailand and Vietnam.

NIP's OPER has been actively engaged in the pandemic influenza planning efforts. NIP staff also contributed to the preparation of the draft National Pandemic Influenza Preparedness and Response Plan, which outlines a coordinated national strategy for dealing with an influenza pandemic. Released in August 2004 and updated in November 2005, the plan provides an overview of key issues involved in facing such a pandemic and outlines actions that should be taken at the national, state, and local levels before and during a pandemic. The plan also includes information for health departments and private sector organizations for use at the local level. The HHS Pandemic Influenza Plan can be viewed at *www.hhs.gov/pandemicflu/plan/*.

Working with the National Center for Infectious Diseases (NCID) and the Office on Terrorism Preparedness and Emergency Response, NIP has also initiated a series of four regional meetings about pandemic influenza planning. Regional meetings, were in Chicago, Denver, Boston, and Atlanta during 2005, were instrumental in bringing state and federal expertise together to discuss planning challenges and identify innovative approaches to solving common problems concerning pandemic influenza. They included presentations by both CDC staff and state presenters, as well as discussion sessions around selected topics, and provided information to help states move forward in developing their pandemic preparedness plans.

The Public Engagement Pilot Project on Pandemic Influenza — to discuss and rank goals for a pandemic influenza vaccination program and to pilot test a new model for engaging citizens on vaccine related policy decisions

In preparation for national pandemic influenza exercises held in 2005 (Pinnacle in June, Pandemic Fury in December), OPER coordinated with subject matter experts from NIP, the National Center for Infectious Diseases, and the Strategic National Stockpile to prepare background material and guidance for the exercise participants.

PUBLIC ENGAGEMENT PILOT PROJECT ON PANDEMIC INFLUENZA

The Public Engagement Pilot Project on Pandemic Influenza (PEPPPI) was initiated in July 2005 to discuss and rank goals for a pandemic influenza vaccination program and to pilot test a new model for engaging citizens on vaccine related policy decisions (The Vaccine Policy Analysis CollaborativE, VPACE). The Pilot Project was sponsored by a network of interested organizations including NIP. To conduct this public consultation, the sponsors engaged stakeholders from various organizations with an interest in pandemic influenza (the National Stakeholder Group), and individual citizens at large from the four principal regions of the United States. The anticipated major benefits from this public consultation were the development of an improved plan to combat pandemic influenza and one more likely to gain public support, and a demonstration that citizens can be productively engaged in informing vaccine related policy decisions.

PEPPPI was carried out in five phases—two day-and-a-half dialogue and deliberation meetings with approximately 50 national stakeholders and consultants, a day-long consultation with over 100 citizens at large in Atlanta which took place in-between the two stakeholder meetings, and three half-day sessions conducted with approximately 150 citizens at large in Massachusetts, Nebraska, and Oregon where citizens were shown the results of the earlier deliberations and asked for their feedback.

Both citizens at large and the National Stakeholder Group decided—with a very high level of agreement—that assuring the functioning of society should be the first immunization goal followed in importance by reducing the individual deaths and hospitalizations due to influenza (i.e., protecting those who are most vulnerable and at risk). Because of the still high importance of the second goal, the groups added that the first goal should be achieved using the minimum number of vaccine doses required to assure that function. This would allow the remaining doses to be used as soon as possible for those at highest risk of death or hospitalization. There was little support for other suggested goals to vaccinate young people first or to use a lottery system or a first-come, first-served approach as top priorities. The groups also defined the federal government's role as providing broad guidance with responsibility for more specific interpretation and implementation remaining with state and local health authorities. Both the public participants in this pilot project and the expert advisory bodies which deliberated separately, ACIP and NVAC, chose protecting society's caretakers and persons at high risk among their top priorities. However, the weight attached by the citizens at large and the National Stakeholder Group to "Assuring the Functioning of Society" appeared to be greater than the weight placed on this goal by the expert advisory bodies. Their joint subcommittee placed higher priority on protecting high risk persons and lower priority on most of the categories of persons responsible for assuring the functioning of society.

This pilot project illustrated to the vaccine community that a diverse group of stakeholders and citizens at large can be recruited to learn about a technical subject, interact respectfully, and reach a productive outcome on an important policy question. Preliminary results from the independent evaluation of all the sessions conducted by the University of Nebraska reaffirmed this conclusion. Furthermore, the corroboration of the results of the deliberations from the four sessions involving the general public in disparate regions of the country, as well as with the National Stakeholder Group meeting in Washington D.C., gives additional weight to the recommendations. Recognition of the importance and utility of these findings was made evident in the HHS Pandemic Influenza Plan released in early November 2005, which described the agency's consideration of the priorities that emerged from the PEPPPI project. More public discussion of a similar type was called for in the HHS plan. The complete PEPPPI report is available at *www.keystone.org/spp/documents/FINALREPORT_PEPPPI_DEC_2005.pdf.*

ACCOMPLISHMENTS IN SMALLPOX ACTIVITIES

SMALLPOX VACCINE SAFETY

Several publications have been completed describing some of the surveillance results for adverse events following smallpox vaccination. Other manuscripts describing surveillance activities are in press.

Adverse Events Associated with Smallpox Vaccination in the United States, January-October 2003 describes the components and findings of the comprehensive HHS smallpox vaccine safety monitoring and response system. The rigorous smallpox vaccine safety screening efforts and educational programs, along with an older vaccinee population likely contributed to low rates of preventable life-threatening adverse reactions. Cardiac adverse events—an unexpected finding—and other rare or clinically significant events were detected by rapid review of VAERS data and intensive clinical investigation.

Superinfection Following Smallpox Vaccination (Vaccinia), United States: Surveillance January 2003 through January 2004 reports that this adverse event was rare during the HHS vaccination program. Many reported superinfection cases were probably large normal smallpox vaccine reactions (robust takes). The case definition for superinfection following smallpox vaccination is included in this publication.

Generalized Vaccinia, Progressive Vaccinia, and Eczema Vaccinatum Are Rare following Smallpox Vaccination (Vaccinia): United States Surveillance, 2003 provides standard case definitions for these three adverse reactions following smallpox vaccination. Two of 29 (7%) reports of possible generalized vaccinia among nearly 38,000 vaccinees met the case definition. None of the three possible eczema vaccinatum and seven possible progressive vaccinia cases met the case definitions. The publication concludes that careful prevaccination screening probably contributed to the low incidence of these adverse reactions.

SMALLPOX DISEASE SURVEILLANCE

The performance of the CDC algorithm for specificity and misclassification of high-risk patients for smallpox was assessed in a rash algorithm study. Nearly 27,000 patients with rash were screened in emergency departments or inpatient units of hospitals. Less than 1% of the patients had an acute, generalized vesicular or pustular rash and they were rarely (1.2 per 1000 admissions) admitted to emergency departments and inpatient units. The CDC algorithm correctly classified these patients as low risk for smallpox.

The CDC Smallpox Response Plan and Guidelines – Guide A (Epidemiologic Preparedness and Response) was completed and revised by NIP. Further responsibility for Guide A will reside with NCID's Bioterrorism Preparedness and Response Program.

EMERGENCY RESPONSE SEMINAR

NIP'S OFFICE OF PREPAREDNESS AND EMERGENCY RESPONSE (OPER), in collaboration with the Coordinating Office for Terrorism Preparedness and Emergency Response, hosted a seminar in August 2005 to provide NIP employees a basic understanding of emergency response for public health incidents. This event helped to ensure that future response activities are successfully coordinated. A key objective of the seminar was to provide NIP staff who may become involved in large-scale emergencies with an understanding of how responses are structured using the Incident Command System (ICS) and what an individual's role(s) may be during a particular event. The seminar also provided a summary of the policies and plans are that guide the federal government's management of domestic incidents (e.g. the National Response Plan, the National Incident Management System, etc.). During the response to the hurricanes in 2005, many attendees were able to see how CDC implemented the ICS and how its operations were conducted under the National Response Plan.

MASS VACCINATION CLINIC EXERCISES

MASS VACCINATION IS A KEY PUBLIC HEALTH RESPONSE to a naturally occurring outbreak or bioterrorist incident, and the 2003 Smallpox Vaccination Preparedness Plan required state and local health authorities to begin preparing for vaccination of large groups of people against smallpox. As a result, state and local health authorities have conducted mass vaccination clinic exercises to practice their ability to vaccinate entire populations in a limited amount of time.

NIP's OPER is systematically collecting and compiling information from the state and local health departments which have conducted these mass vaccination clinic exercises to identify lessons learned and best practices. This project will categorize and highlight the aspects of mass vaccination clinics that are timely, accessible, and efficient, and which will enable CDC to better understand current mass vaccination preparedness activities at the state and local level. The information gathered from this project may be used by CDC to develop general recommendations and, eventually, national guidelines for mass vaccination clinics occurring at the state and local level.

San Antonio – *Over 70 NIP people were deployed to missions here and at other hurricane relief centers along the Gulf Coast.*